

Selling Sustainability to Your Roadblocks ... the NAVFAC Story

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Naval Facilities Engineering Command





Headquarters, Naval Facilities Engineering Command, Washington Navy Yard,

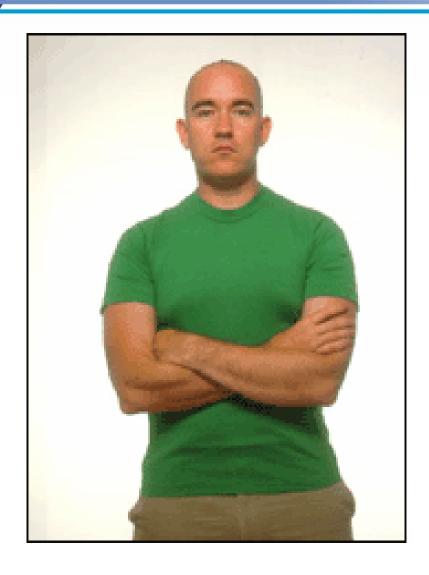
NAVFAC is a global, military command with a Headquarters element and Component Commands that work together as one organizational team.

NAVFAC's mission is to provide facilities engineering support to the Navy, the Marine Corps, and others as assigned.

8/21/2005

Resistance to Change









"I hate change."



Our Roadblocks





- Buy-in, direction & implementation
- Awareness and knowledge
- Programming process
- Design process
- •Energy team vs. sustainable team
- Unified approach by the Military Departments
- Cost & building performance data
- Cost/benefits

2005 Ene**rgy**

NAVFAC Sustainable Policy



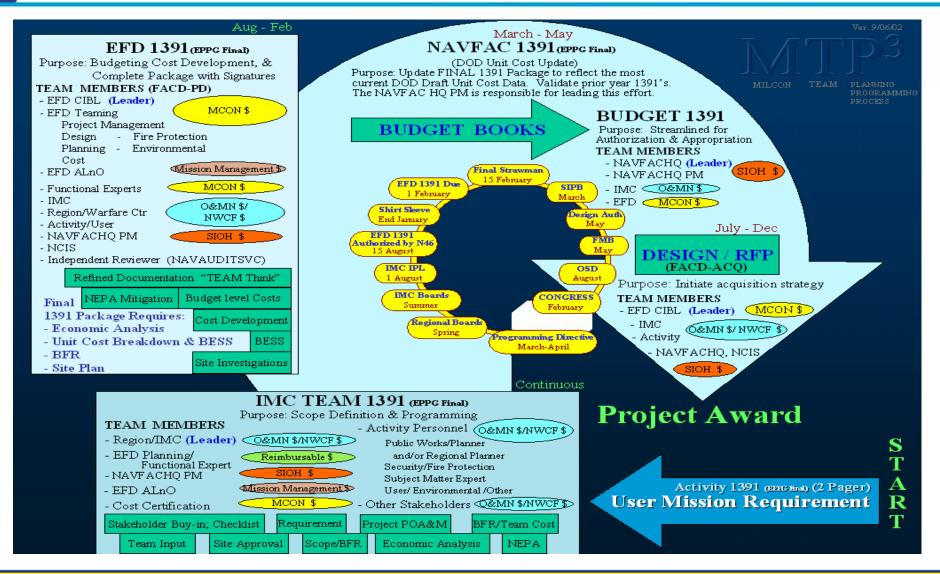
- NAVFAC projects must comply with NAVFAC Instruction 9830.1, Sustainable Development Policy.
- Reduce the total cost of ownership of shore facilities by implementing sustainable design concepts and principles.
- •Use LEED as a tool in applying sustainable development and as a metric to measure the sustainability achieved.
- •All applicable projects shall meet the LEED Certified level unless justifiable conditions exist that limit the pursuit and accomplishment of the LEED credits necessary for achieving the Certified level.





Project Programming Process





Programming Document



Standard process for incorporating SD features and costs into 1391

- Use LEED Checklist and identify credits and LEED level for the project.
- Box 9 Add additional costs for SD features under appropriate
 Supporting Facility line item. Do not add
 Sustainable line item.
- Box 10 Add "SD will be integrated into the project ..."

| 1. Component NAVY | FY 2003 MILITARY CON | STRUCTIO | N PROGR | AM 2 | 2. Date 7/5/01 | | | | | | | |
|--|---|--|----------------------------------|-------------------------------|--|--|--|--|--|--|--|--|
| 3. Installation and Loca | ation/UIC: N62688 | 4. Proje | 4. Project Title | | | | | | | | | |
| NAVAL STAT | ION NORFOLK IRGINIA | | BACHELOR ENLISTED QUARTERS (BEQ) | | | | | | | | | |
| 5. Program Element | 6. Category Code | 7. Project Numb | er 8. Pro | ject Cost (\$000) | | | | | | | | |
| 0204796N | | P-293 | 37,0 | 000 | | | | | | | | |
| | 9. COST E | STIMATES | | - | | | | | | | | |
| | ltem | U/M | Quantity | Unit Cost | Cost (\$000 | | | | | | | |
| BACHELOR EN BUILT IN EC INFORMATION TECHNICAL (ANTI-TERROI ARKING SIN SUPPORTING FAC SPECIAL CON ELECTRICAL MECHANICAL PAVEMENT SITE IMPROV DEMOLITION THERMAL NO FACILITY SI | STED QUARTERS (BEQ) ALISTED QUARTERS QUIPMENT N SYSTEMS DEFRATING MANUALS AUSM/FORCE PROTECTION AUCTOR (2100 AUTOS) CILITIES STRUCTION FEATURES UTILITIES UTILITIES VEMENTS | m2 m2 LS | 95,550 17,500 | 346 | (950 (530 (190 (2,240 | | | | | | | |
| CONTRACTOR CONTRACTOR | r COST nspection & Overhead (6.0%) | LS | - | - - - - (NON-ADD) | 76,38 3,83 80,20 4,80 85,00 -48,00 37,00 (5,140 | | | | | | | |

DD Form 1391



Budget Estimate Summary Sheet



SUPPORTING FACILITIES

SPECIAL CONSTRUCTION FEATURES
ELECTRICAL UTILITIES
MECHANICAL UTILITIES
PAVING

* <u>SITE IMPROVEMENTS</u>

DEMOLITION

| 1. Component HAVY | FY 2 | 1003 MILITARY CO | ONSTRU | стю | N PROGI | RAM | 7/5/01 | | | | |
|---|---|---|----------------------|---------|-----------|------------------|--|--|--|--|--|
| 1 Invaliation and Loc | ation Circ. II | 62588 | Chie | i Title | - | | | | | | |
| MAVAL STATION MORPOLE MORPOLE, VIRGINIA | | | | | CHELOR BE | LISTED QU | QUARTERS | | | | |
| 5. Program Element | | 6 Category Code | 1. Proje | a Numb | at I K Fe | ojest Cost (\$0) | (1) | | | | |
| 02047963 | 4 | 721.13 | -293 | 37, | 000 | 00 | | | | | |
| | | 3.000 | ESTIMAT | is | | | | | | | |
| | | hem | - Contraction of the | D/M | Ownery | Unit Co. | Coa (\$00 | | | | |
| SUPPORTING PA SPECIAL CO ELECTRICAL MECHANICAL FAVEMENT SITE 1MPG DESIGN BUI FORTING CONTRAC SUPPORT CONTRAC SUPPORT S | MLISTED QUIPMENT M SYSTEM GPERATIN CPILITIE MATRICELL UTILITI VEHENTS (OR PLANT LD DMSIG (5.0%) T COST INCO | QUARTERS 65 66 67 68 68 68 68 68 68 68 68 68 68 68 68 68 | | | 95,550 | 1,31 | (95) (53) (15) (2,24) (2,24) (2,24) (3,64) (2,10) (1,89) (1,56) (4,16) (3,55) (3,55) (3,55) (3,64) (4,16) (| | | | |

| Site Improvements | UM | QTY | Unit | <u>Total</u> |
|-------------------|----|------|------|--------------|
| Storm Drainage | m | 316 | 174 | 55,000 |
| Earthwork | m3 | 1000 | 66 | 66,000 |
| Topsoil/Seed/Sod | m2 | 2500 | 6 | 15,000 |
| Landscaping | LS | 1 | 11K | 11,000 |
| * Stormwater Pond | LS | 1 | 50K | 50,000 |
| Land Restoration | m2 | 1500 | 75 | 11,250 |



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Integrated Design



Sustainable design is an integral objective in the "whole building" design process. It is not a stand-alone feature, not an afterthought and not to be added or subtracted from a project without negatively affecting a holistic design philosophy which advocates a successful "whole building" design is a solution that is greater than the sum of its parts.



The integrated design process enables project team members to work together from the project outset to develop solutions that have multiple benefits.





Training



- <u>Upper Management Brief</u> 35 slide PowerPoint distributed to component offices for their use with the understanding the Brief is to be edited as necessary for their office and audience. Target audience is upper management.
- <u>Classroom</u> USGBC, FEMP & SBIC Workshops have been given to most of our component offices. Target audience is primary users of LEED, e.g. architects, engineers, planners, project managers.



NAVFAC has over 75 LEED Accredited Professionals.

 Online – Web-based training for members of the project acquisition team – all Business Lines – to educate and identify the <u>changes to</u> <u>our internal processes to integrate sustainable development</u> <u>into our overall acquisition process</u>.



A multimedia, online modular training course (and Web system)

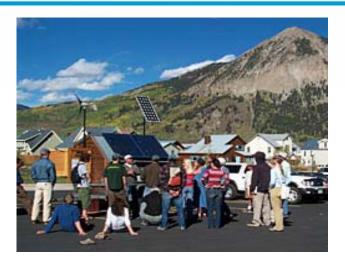


- Provides an overview of sustainable development concepts and principles.
- Details each NAVFAC project team member's responsibilities throughout the acquisition process to assure achievement of sustainability goals.



Project Team Members

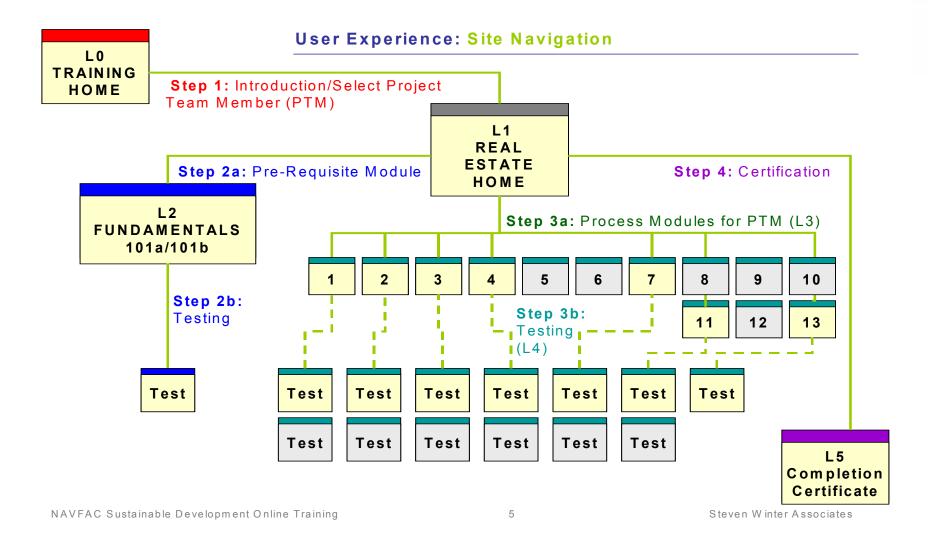
- 1. Real Estate
- 2. Environmental
- 3. Planning
- 4. Programming
- 5. Cost Engineering
- 6. Contracts
- 7. Project Management
- 8. Capital Improvement (NAVFAC architects & engineers)
- 9. ROICC/Construction Management
- 10. Public Works/Base Operations System (BOS)
- 11. Facilities Management/O&M
- 12. Facility Occupation & Use (customers/occupants)
- 13. A/E Design (Private architects & engineers)
- 14. Facility Construction (contractors)





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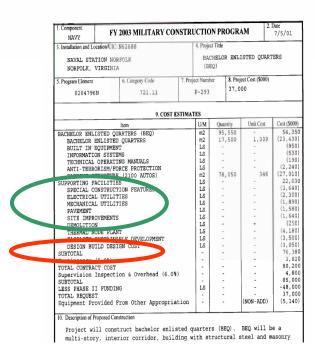




Process Modules

Topics

- 1. Feasibility Study
- 2. Program Development
- 3. Project Funding
- 4. Site Selection
- 5. Architect-Engineer Procurement
- 6. Design Charrette
- 7. Design Reviews
- 8. Construction Procurement
- 9. Construction
- 10. Commissioning
- 11. Turnover/Activation/Occupancy
- 12. Post-Occupancy/Operations & Maintenance
- 13. Disposal





Tools and Resources





NAVFAC has developed** and uses design tools such as the Whole Building Design Guide (WBDG) and the LEED-DoD Antiterrorism Standards Tool.

www.wbdg.org/





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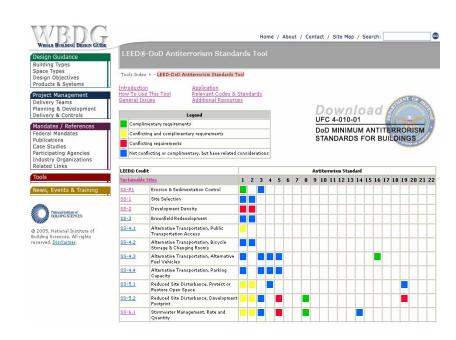
LEED-DoD Antiterrorism Standards Tool



DoD requires its buildings to be secure and sustainable. The challenge is to satisfy these design requirements in a balanced, integrated cost-effective solution.

This tool:

- analyzes and integrates LEED and UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings,
- can save design and construction costs,
- and will integrate AT requirements, sustainable strategies/features and aesthetics.



LEED-DoD Antiterrorism Standards Tool



Whole Building Design Guide

Design Guidance

Building Types Space Types Design Objectives Products & Systems

Project Management

Delivery Teams Planning & Development Delivery & Controls

Mandates / References

Federal Mandates Publications Case Studies Participating Agencies Industry Organizations Related Links

Tools

News, Events & Training



© 2005, National Institute of Building Sciences. All rights reserved. <u>Disclaimer</u>. LEED®-DoD Antiterrorism Standards Tool

Tools Index > - LEED-DoD Antiterrorism Standards Tool

Introduction How To Use This Tool General Issues Application Relevant Codes & Standards Additional Resources

| Legend |
|---|
| Complimentary requirements |
| Conflicting and complimentary requirements |
| Conflicting requirements |
| Not conflicting or complimentary, but have related considerations |

Download

UFC 4-010-01

DoD MINIMUM ANTITERRORISM
STANDARDS FOR BUILDINGS

Home / About / Contact / Site Map / Search:

| LEED® Credit Antiterrorism Standard | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|---|---|---|---|---|---|---|---|---|-----|----|----|----|----|----|----|----|----|----|----|----|----|
| Sustainabl | e Sites | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| SS-P1 | Erosion & Sedimentation Control | | | | | | | | | | | | | | | | | | | | | | |
| SS-1 | Site Selection | | | | | | | | | | | | | | | | | | | | | | |
| <u>SS-2</u> | Development Density | | | | | | | | | | | | | | | | | | | | | | |
| <u>88-3</u> | Brownfield Redevelopment | | | | | | | | | | 9-3 | | | | | | | | | | | | |
| SS-4.1 | Alternative Transportation, Public Transportation Access | | | | | | | | | | | | | | | | | | | | | | |
| <u>SS-4.2</u> | Alternative Transportation, Bicycle Storage & Changing Rooms | | | | | | | | | | | | | | | | | | | | | | |
| <u>SS-4.3</u> | Alternative Transportation, Alternative Fuel Vehicles | | | | | | | | | | | | | | | | | | | | | | |
| SS-4.4 | Alternative Transportation, Parking Capacity | | | | | | | | | | | | | | | | | | | | | | |
| SS-5.1 | Reduced Site Disturbance, Protect or Restore Open Space | | | | | | | | | | | | | | | | | | | | | | |
| <u>88-5,2</u> | Reduced Site Disturbance, Development Footprint | - | | | | | | | | | | | | | | | | | | | | | |
| SS-6.1 | Stormwater Management, Rate and Quantity | | | | | | | | | | | | | | | | | | | | | | |

Green Specifications





Specifications

Appelifications

According foreign or

Environmentals real

Indiangles without

The scope of this project is to revise the Unified Facilities Guide Specifications (UFGS) that are used for Navy projects to incorporate sustainable development principles.

Value/benefits:

- Reduce design costs
- Provide corporate consistency
- Get sustainable strategies/features in projects

UFC Sustainable Development



<u>Unified Facilities Criteria Sustainable</u> <u>Development</u>

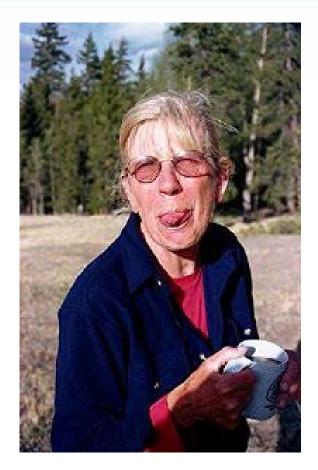
- This product consolidates the Services' policies, processes and guidance into a single unified resource.
- Subjects include: DoD sustainable mandates, planning and programming (DD Form 1391), sustainable strategies and features, case studies and examples of language to use for solicitations, SOWs, etc.





Program Metrics





Typical reaction to request for data

Why?

- Measure & evaluate progress
- Show value added
- •Guide initiatives for improvement

What?

- # and level of sustainable projects
- Design and constructions costs for sustainable design
- Energy savings (kWh/yr)
- Energy cost savings (\$000/yr)
- •ASHRAE reduction (%)
- Water savings (gal/yr)
- Water cost savings (\$000/yr)
- Water savings (%)



Building Performance Metrics



Why?

- Sustainable design is being used to reduce total ownership costs of Navy buildings
- Results of this investment determined primarily by manufacture estimates and modeling
- To determine a more accurate return on investment (ROI), actual performance of buildings needs to be measured





Building Performance Metrics



Building performance data will be used to:

- Determine actual building ROI for sustainable development strategies and features
- Identify opportunities for building performance improvement
- Measure the design's effectiveness as further evidence of the business case for sustainable development across the Navy





Building Performance Metrics



What?

- Total building potable water use (gal/month & \$/month)
- Total building energy use (kWh/mo, \$/mo & Btu/mo)
- Building maintenance (\$, hrs, # requests by type & # preventive maintenance
- Solid sanitary waste (cubic yd/mo, ton/mo & 4/mo)
- Environmentally preferable purchasing (\$ all/yr & \$ EPP/yr)
- Occupant health and productivity (turnover, absenteeism, occupant satisfaction and occupant productivity)
- Transportation (regular commute: mpg & miles/week)





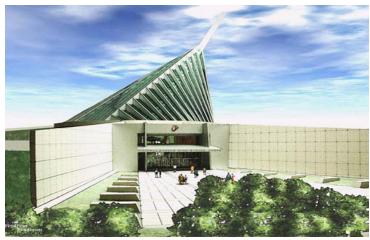
Case Studies



Eliminate mistakes and repeat successes.











Business Case



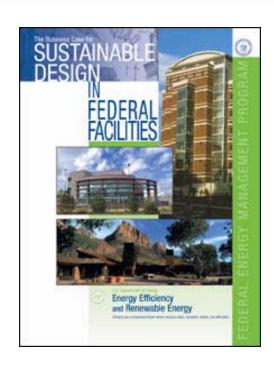
The way we should be doing business.

Why?

- DoD has a different mission and facilities
- •Demonstrate that sustainable buildings are economically viable, satisfy our mission and user requirements, healthier/more productive and environmentally sound
- •Obtain buy-in and direction for implementation for sustainable design and a total building life cycle cost approach versus first costs
- Target audience senior Navy personnel and comptrollers

What?

- •Analyze the program metrics data to determine the costs/benefits of sustainable design for Navy facilities
- Prepare business case report and PowerPoint presentation





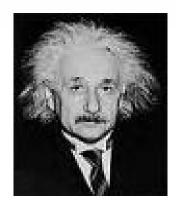
Final Thoughts





Unless we change direction, we are likely to end up where we are going. *Chinese Proverb*





Today's problems cannot be solved if we still think the way we thought when we created them. *Einstein*

- 1. Demonstrate sustainable design using an integrated, total life cycle cost approach is the way we should be doing business.
- 2. Change and do it.

Questions & Comments



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Program Manager

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